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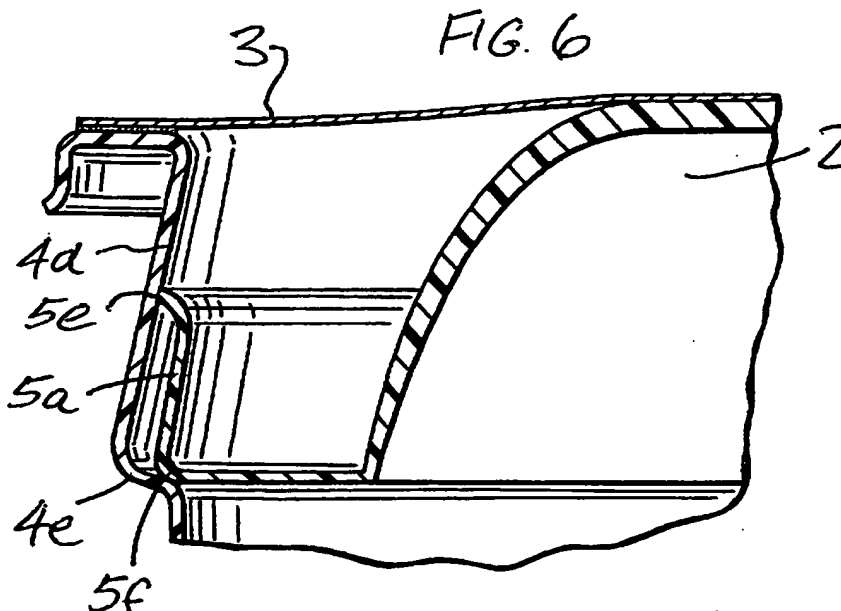
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B8P PL1  
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GB 2252963 A GB 1420166 A GB 1349481 A  
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GB 0915007 A GB 0725246 A GB 0280658 A  
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(58) Field of Search  
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(54) Abstract Title  
Tamper evident container

(57) A container comprises a receptacle and a lid (2), the lid having a rim (5a) which cooperates with an undercut recess (4) of the receptacle to provide a tight fit. A handle on the lid (2) may be grasped to remove the lid (2). A web (3) such as a label initially covers the lid (2) and must be removed or penetrated to allow the lid (2) to be removed, thus providing tamper evident means.



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FIG. 1

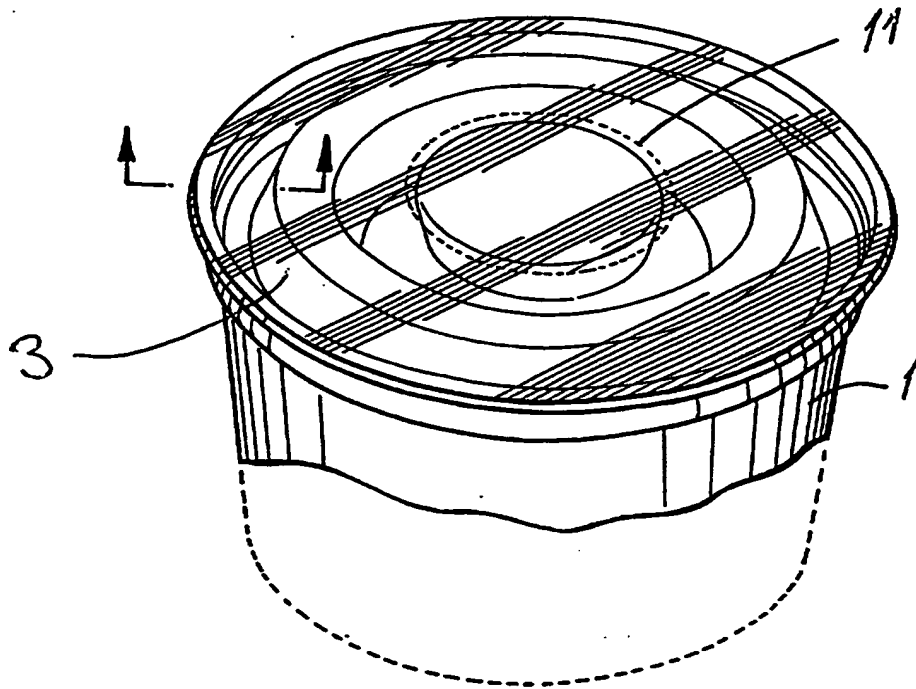


FIG. 2

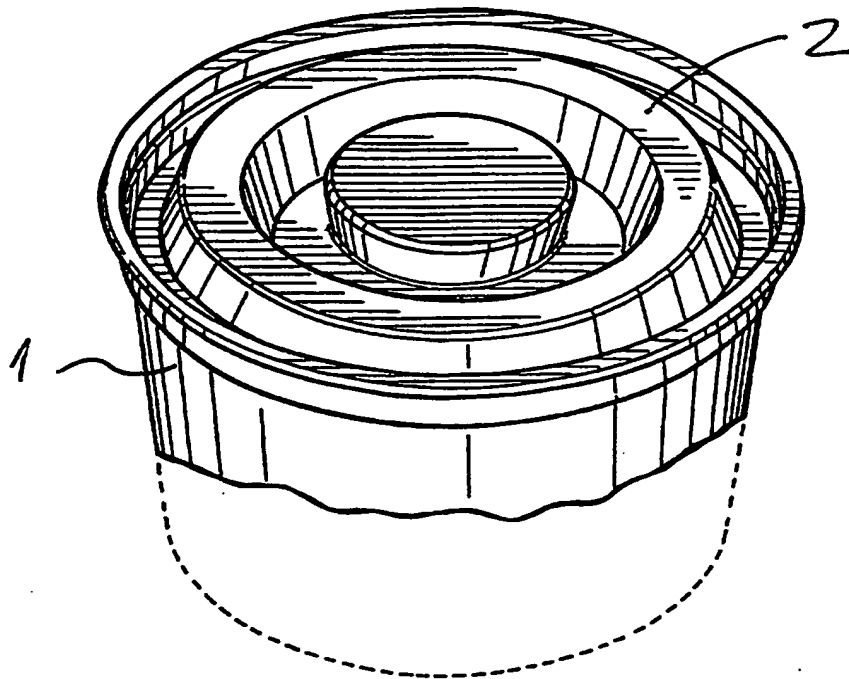
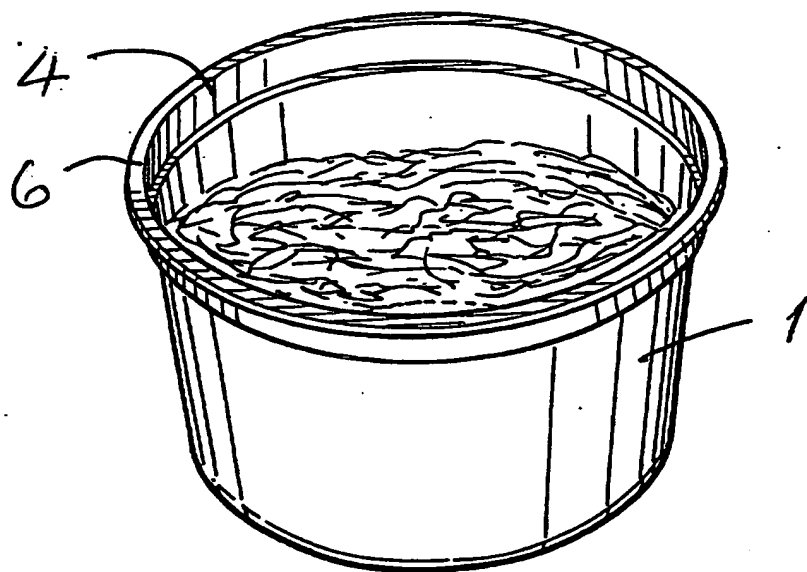
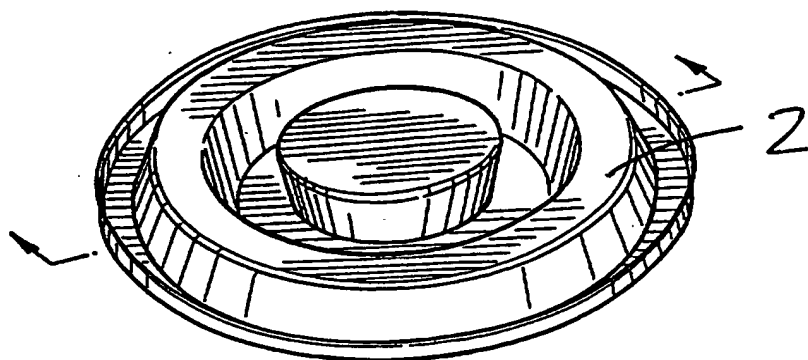
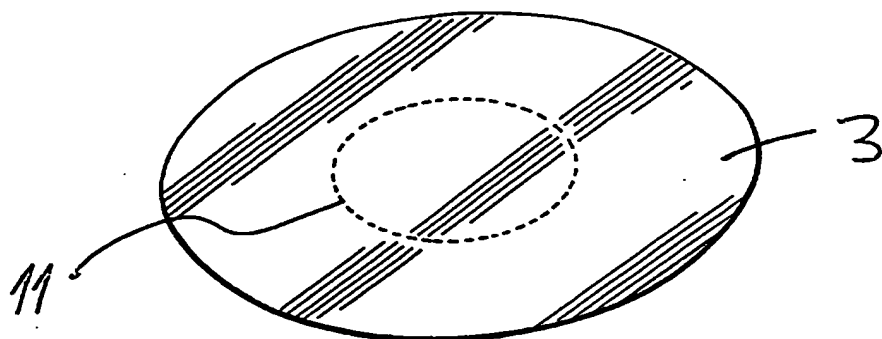
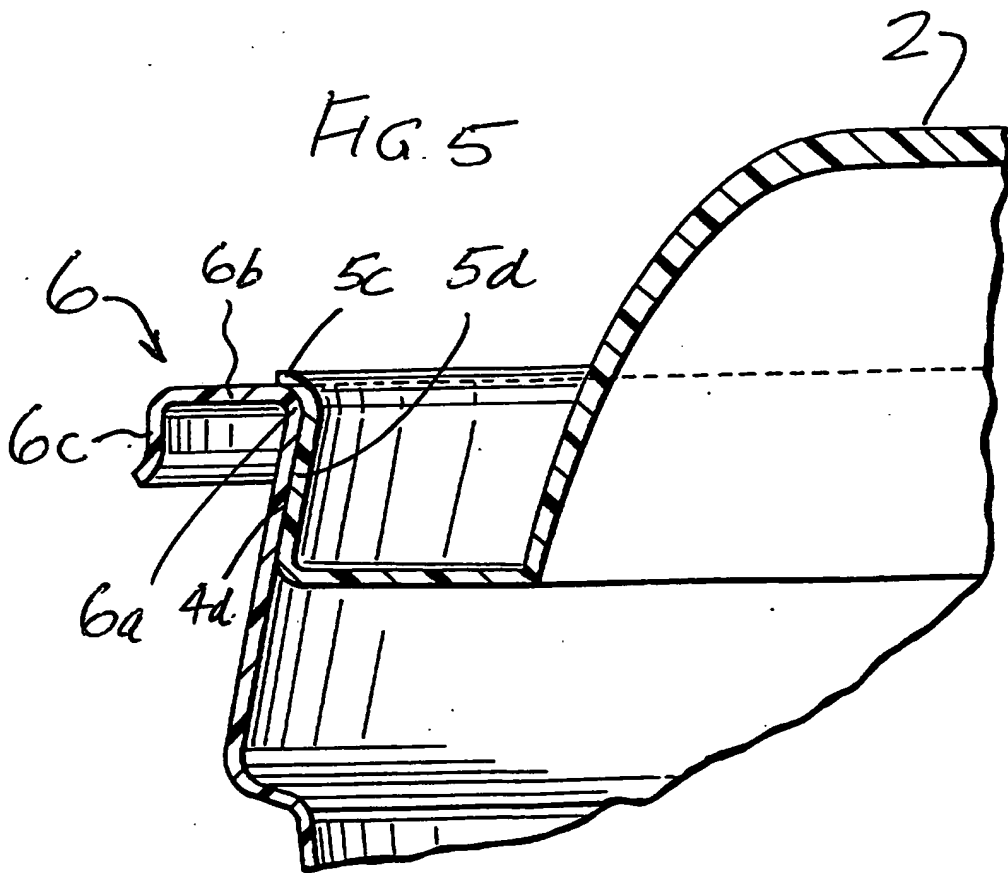
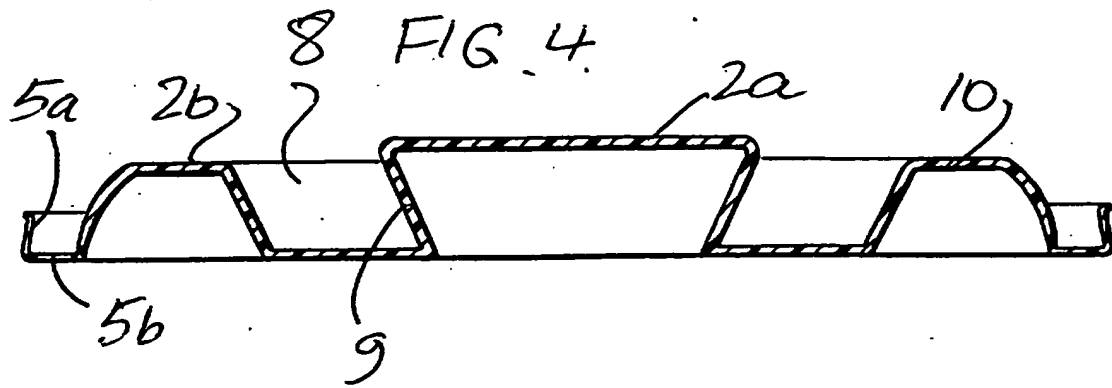


FIG. 3



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FIG. 6

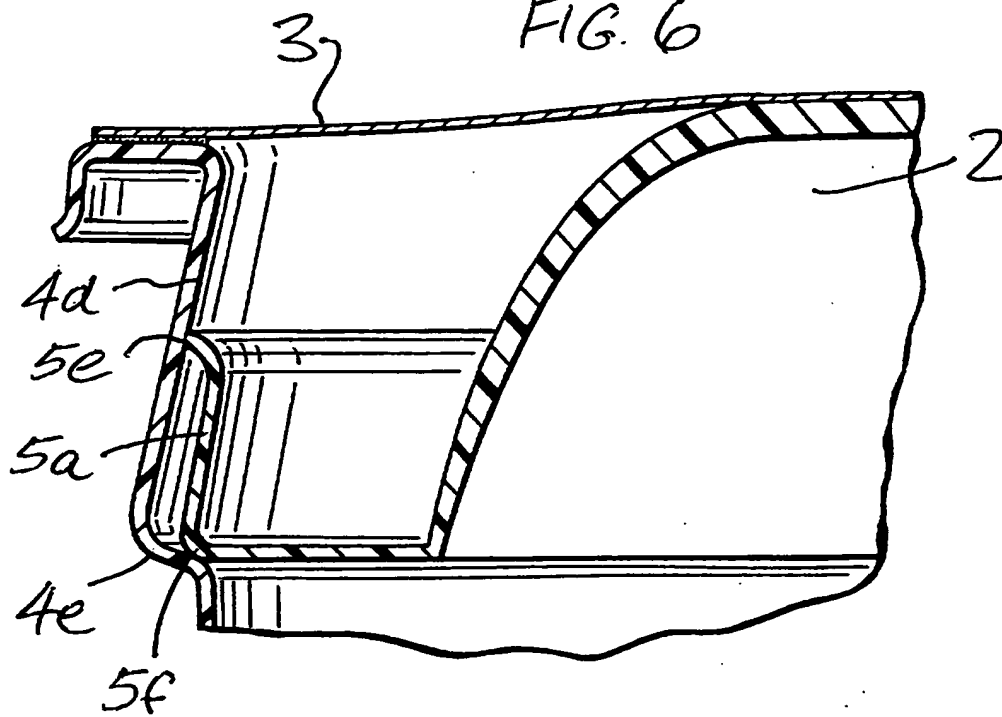
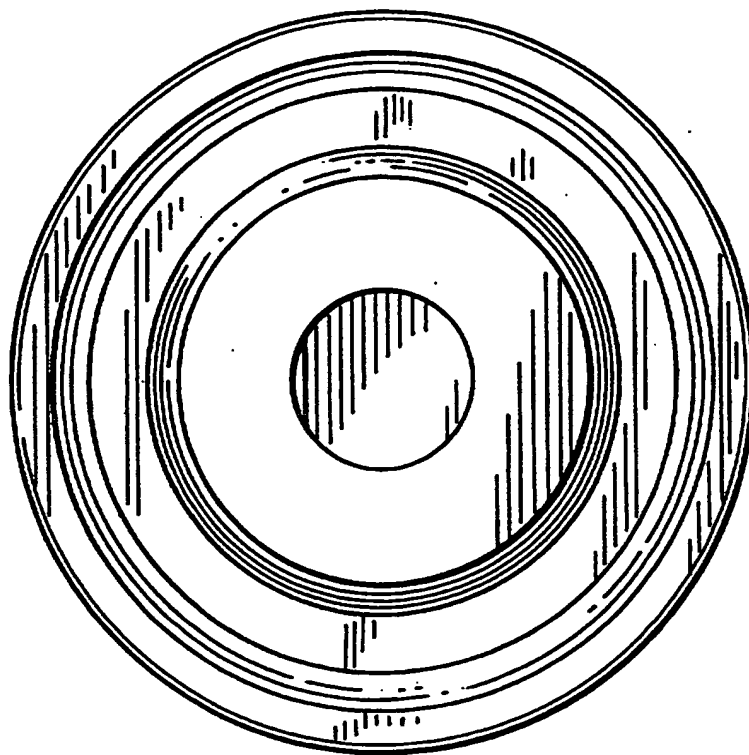


FIG. 7



TAMPER EVIDENT CONTAINER

5 The present invention relates to a container which may be used, for example, for food products. The term "container" (as used herein) includes a receptacle for the contents and a lid for closing the receptacle to retain the contents.

According to one aspect of the invention, the container is of a tamper evident  
10 construction, i.e it is made so that the lid cannot be removed without leaving evidence of its removal. Such tamper evident containers are generally known in the art.

According to another aspect of the invention, the rim of the container cooperates with the rim of the lid to provide a tight fit, without making use of a snap-lock  
15 construction. Such a container can be opened either so that its contents can be used immediately and the lid then discarded, or it can be closed (after use) so that the remaining contents can be used on another occasion, the rim construction enabling the container to be firmly resealed.

20 The different aspects of the invention can be applied individually or together to the same container. When used together, in a preferred embodiment of the invention, the lid cannot be removed without first breaking a web to provide access to a part of the lid which facilitates its removal from the receptacle.

25 Known tamper evident containers are useful in showing whether the contents have been exposed to the environment, or whether additional contents may have been introduced into the container, or whether the contents have otherwise been tampered with. These containers can be used for storing, for example, pharmaceuticals and other chemicals, foodstuffs (such as butter and other spreads and ice cream), paints  
30 and varnishes and other items such as medical or surgical instruments. Some conventional containers use complex snap locks for retaining the lid and have tear off strips which need to be fully removed before the lid can be moved away from the

receptacle. Other constructions require a web or label to be removed simultaneously with the lid, which can be manually difficult.

5 One aspect of the invention, has the aim of providing a tamper evident container of a simple but reliable construction. Generally speaking, such a tamper evident container comprises a receptacle, a lid for closing the receptacle, and tamper evident means for leaving evidence of lid removal;

- (a) the lid including a handle which can be grasped to facilitate removal of the lid; and
- 10 (b) the tamper evident means being arranged to deny access to the handle so that the tamper evident means must be penetrated or removed to gain access to the handle before the lid can be removed.

With the latter container, the tamper evident means must be penetrated or perforated  
15 before the handle can be used to remove the lid and hence there will be clear evidence of any tampering. The tamper evident means is preferably a label or web which extends over the handle in such a way as to prevent it from being grasped. Preferably the handle is formed integrally with the lid, for example, it can be part of a moulding which defines a protuberance. The protuberance can be inset with respect  
20 to an uppermost plane of the lid, so that the web or label can extend in a substantially single plane across the lid, to facilitate attachment, whilst covering the handle. However, the upper surfaces of the handle, a surrounding annulus and the peripheral rim can be in slightly different planes, e.g. with that of the handle being higher than that of the annulus and the latter higher than the peripheral rim. In a preferred  
25 embodiment the handle is defined by a circular groove or recess, which extends inwardly of the receptacle and lies between the handle and the annulus.

The label or web can be a disc extending over the entire lid area and either be secured to the rim of the receptacle or to the lid (without extending over the  
30 receptacle). It can also be a strip, e.g. shaped like a watch strap, which passes over a central part of the lid and is secured to outer side surfaces of the receptacle.

Preferably, a rim portion of the receptacle cooperates with a rim portion of the lid to provide a tight enough fit to prevent the lid from being removed other than by using the handle. The receptacle and the lid preferably have circular peripheries or rim portions which cooperate to provide this tight fit.

5

According to another aspect of the invention, the object is to provide a resealable container with a tight fitting lid, but without employing a snaplock construction. Generally speaking, such a container comprises a receptacle, a lid to close the receptacle;

10           a rim portion of the lid being flexible and a wall adjacent the rim of the receptacle being recessed so that, when the lid is fitted to the receptacle, the rim portion of the lid flexes to enable it to enter said recess.

15           The rim portion of the lid preferably includes a peripheral wall and a flange which extends outwardly from the peripheral wall. In this case, an edge of the flange contacts the surface of a wall of the recess when the lid is pushed onto the receptacle and slides relative to the latter surface when the lid is pushed into the mouth of the receptacle. (This is somewhat similar to the action of a piston ring on a piston moving in a cylinder).

20

Preferably, the recess undercuts the rim of the receptacle so that the circumferential flange of the lid must be forced past the circumferential rim of the receptacle into a peripherally larger space defined by the recess. This enables the flexible rim of the lid, and hence the flange, to spring back slightly when the lid is pushed home against  
25           an abutment e.g. another wall of the recess.

Preferably, the lid (and/or receptacle) is moulded from stiff but flexible and/or resilient sheet plastics material. Such material is often used in thin sheets in blow moulding and it is usually formed to give stability. The lid and/or receptacle can also  
30           be formed by injection moulding. The rim portion of the lid is strengthened by an upturned portion which forms the peripheral wall that faces the wall of the recess in the receptacle, and also by the above mentioned flange which extends transversely



towards the recess wall. Preferably, the sheet material of the lid is thicker over a central or major portion than at its rim portion. For example, at least the peripheral wall and flange are thinner than the rest of the lid so as to improve their flexibility. A transverse portion of the rim, which forms an L-section with the peripheral wall, can also be as thin as the peripheral wall and the flange. Preferably, opposite wall surfaces of the recess and of the upturned portion are generally parallel and are either in close proximity, or in sliding contact. The upturned portion preferably extends upwardly from a transverse portion with which it forms an L-shaped cross-section.

10 Preferred embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a container having a receptacle, a lid, and a tamper-evident label, the container being shown in a vendible, i.e. unopened condition;

Fig. 2 is a similar perspective view with the label removed, prior to opening the container by removing the lid;

Fig. 3 is a similar perspective showing the label lid and container separately;

Fig. 4 is cross sectional view of the lid.

Fig. 5 is an enlargement of rim portions of the receptacle and lid shown in Fig. 1 with the lid in a preliminary closing position; and

Fig. 6 is an enlargement of the rim portions of the receptacle and lid shown in Fig.3 with the lid in a fully closed position and the label attached.

Fig. 7 is an underside plan view of the lid.

The containers described below are preferably made of thin flexible and mouldable plastics material which (a) gives the receptacle and lid sufficient strength and

durability for storing the contents over (say) their intended shelf life, (b) is sufficiently economic for the mass production of (say) disposable containers, and (c) provides the rim construction of the receptacle and lid with the flexibility and rigidity needed to provide a tight fit and a good seal.

5

Referring to the drawings, a container comprises a receptacle 1, a lid 2 and a tamper-evident label 3. The label 3 is shown transparent to enable the lid to be seen (but it can be opaque, e.g. a paper or plastic label which can optionally have a description and/or advertising material on its upper surface). In the illustrated example, the  
 10 receptacle is generally conical in shape, but it could also be cylindrical. Circular or approximately circular (e.g. elliptical; oval; etc) shapes are advantageous in enabling the lid and upper portion of the receptacle to cooperate, like a piston and cylinder, when the lid 2 is fitted (this is explained in more detail below). As shown in fig. 3, the receptacle 1 has a recess 4 adjacent its peripheral turned over (or out-turned, or  
 15 rounded) rim 6 for receiving the peripheral rim of the lid 2. As shown in Fig. 4, the rim of the lid 2 includes, a generally upstanding (or vertical) circumferential rim portion 5a, like a circular band, extending upwardly from base portion 5b. This rim portion 5a is provided with a narrow flange or lip or flared portion 5c, extending transversely (or horizontally) outwardly. Because it is narrow, the flange 5c is  
 20 comparatively rigid but flexible (like a narrow blade). The flange 5c is slightly curved in cross section, so that when the lid 2 is placed on a similarly curved or rounded corner 6a of the rim 6 (at the top of the receptacle), the flange 5c conforms with rounded corner 6a of rim 6 i.e. they are generally a flush fit, as shown in Fig.5. The rim 6 and flange 5c are similarly curved to facilitate this fit, but other  
 25 conforming shapes could be used. The rim 6 also has a flat portion 6b and a downturned portion 6c as shown. The upturned portion 5a, the flange 5c and transverse portion 5d cooperate to provide the rim of the lid with strength and flexibility. The outer wall of rim of lid 2 faces the inner wall of recess 4, whereby opposite surfaces 4d, 5d of the recess 4 and the upturned portion 5a are generally  
 30 parallel and are in sliding contact (or in close proximity).

The recess 4 of the receptacle, is generally triangular or wedge-shaped as shown in

section (Figs. 5 and 6) and it undercuts the circumference of the circular opening of the receptacle, whereby the circumferential space defined by the bottom of the recess is larger than that defined by the circular opening space of the receptacle rim 6. The flange 5c of the lid is of a slightly larger diameter than that of the mouth of the receptacle and the lid 2 therefore needs to be forced into the mouth of the receptacle 1 when it is fitted. As the rim of the lid is flexible, it flexes when the lid is pushed into the mouth of the receptacle, and thereby enables the flange 5c to enter the mouth of the receptacle and to pass into the recess. The edge 5e of the flange 5c then contacts the wall 4d of the recess when the lid is pushed down and this causes the upturned portion 5a or to flex inwardly (as shown in Fig. 6) so that the flange 5c is biased towards the sloping wall 4d of the recess whilst the lid is being pushed on. A lower corner 5f of the rim of lid 2 finally reaches an abutment in the form of the lower wall 4e of the recess at which point the flange 5c is still biased against the sloping wall 4d of the recess to provide a good seal. This construction promotes a surprisingly good seal, i.e. to the extent that a resealed container can be inverted with its contents in place without the lid falling off. This is assisted by the undercut recess below the rim of the receptacle, since the flange of the lid must be forced inwardly, to clear the rim of the receptacle, when the lid is manually removed.

Referring to Fig 4, the lid 2 is shown in section. It is moulded so as to define two annular concentric recesses 7,8. The inner annular recess 8 is large enough to accommodate the user's fingers, so that a protuberance or knob 9, which acts as a handle, can be gripped and pulled upwardly to remove the lid. Gripping is made easier by making the circumference of the base of the knob smaller than that of the top e.g. by making it reversely conical. The knob is flat on top, which facilitates closure and also provides a generally coplanar surface for attaching a disc shaped, annular, or "watch strap" label 3 to the lid 2 to deny access to the annular recess 8. This label, which can contain advertising and/or descriptive material, can be adhered (heat welded, sealed) to the generally coplanar surfaces 2a, 2b at the top of the knob 9 and surrounding annulus 10 and receptacle rim 6b. However, these surfaces can extend in different planes as shown, so as to ensure that the label touches (and it attached) to each surface 2a,2b, 6b when it is applied. The label 3 must therefore be

penetrated or removed to gain access to the knob 9 before the lid can be removed. The rim portion of the lid not only provides a tight fit but it is also located well below the level of the receptacle mouth when the lid is pushed home. This prevents the lid from being removed without first gaining access to the knob 10. The label or  
5 web can have a ring of perforations 11 extending around the inner annulus to assist breakage of the web 3. If there has been any attempt to remove the lid before sale, there will be clear evidence of such tampering or damage.

As the lid 2 is moulded from thin plastics sheet material (used in making blow  
10 moulded containers for the food industry), upturned portion 5a, the flange 5c, portion 5b extending inwardly away from the upturned portion, and the raised shapes formed by the annular recesses 7,8 assist in reinforcing the lid 2 so that it does not buckle when fitted and removed. It will also be noted that most of the lid is thicker than its rim portion, i.e. flange 5a, portion 5b and flange 5c are thinner (for improved  
15 flexibility) than the rest of the lid (for strength).

**CLAIMS**

1. A tamper evident container comprising a receptacle, a lid to close the receptacle, and tamper evident means for leaving evidence of lid removal;  
the lid including a handle which can be grasped to facilitate removal of the lid;  
and  
the tamper evident means being arranged to deny access to the handle so that the tamper evident means must be penetrated or removed to gain access to the handle before the lid can be removed.
2. A container according to claim 1, wherein a rim portion of the container cooperates with a rim portion of the lid to provide a tight enough fit to prevent the lid from being removed other than by using the handle.
3. A container according to claim 1 or 2, wherein the tamper evident means is a label or web which extends over the handle in such a way as to prevent it from being grasped.
4. A container according to claim 3, wherein the handle is formed integrally with the lid.
5. A container according to claim 4, wherein the handle is part of a moulding which defines a protuberance.
6. A container according to any of claims 3 to 5, wherein the protuberance is inset with regard to the plane of the lid, so that the web or label extends across the lid and thereby covers the handle.
7. A container according to any preceding claim, wherein the handle is defined by a groove or recess, which extends inwardly of the container.

8. A container according to any preceding claim, wherein the receptacle and the lid have circular rim portions which cooperate to provide a tight sealing fit.
9. A container comprising a receptacle and a lid to close the receptacle; a rim portion of the lid being flexible and a wall adjacent the rim of the receptacle being recessed so that, when the lid is fitted to the receptacle, the rim of the lid flexes whilst entering the recess.
10. A container according to claim 9, wherein the rim portion of the lid is partly defined by a flange which extends outwardly of the lid so that an edge of the flange contacts the wall of the recess when the lid is pushed onto the receptacle.
11. A container according to claim 10, wherein the recess undercuts the rim of the receptacle so that the flange of the lid must be forced past the rim of the receptacle into a peripherally larger space defined by the recess.
12. A container according to any of claims 9–11, wherein the lid is moulded from sheet material, the rim portion of the lid having an upturned portion which faces the recess wall, the flange extending outwardly away from the upturned portion.
13. A container according to any of claims 9–12, wherein the recessed part of the receptacle and the flanged part of the lid have circular peripheries so that they cooperate like a piston and cylinder to provide the tight sealing fit.
14. A tamper-evident container as claimed in any one of Claims 1 to 8 and substantially as herein described with reference to the accompanying drawings.
15. A container as claimed in any of claims 9–13 and substantially as herein described with reference to the accompanying drawings.



Application No: GB 9912342.4  
Claims searched: 1 to 8 & 14

Examiner: Mike Henderson  
Date of search: 29 February 2000

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): B8P (PT) B8T (TTB TWA TWX)

Int Cl (Ed.7): B65D 39/16 51/18 55/02 55/06

Other: ONLINE:WPI,EPODOC,JAPIO

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2252963A (MONO CONTAINERS LTD) (Whole disclosure relevant)	1 to 8
X	GB 1343665 (CHRISTENSEN et al) (Whole disclosure relevant)	1 to 8
X	GB 1145764 (ILLINOIS TOOL WORKS INC) (Whole disclosure relevant)	1 to 7
X	GB 915007 (PLASTOMATIC CORP) (Whole disclosure relevant)	1 to 8
X	WO 96/16871A1 (TETRA LAVAL HOLDINGS & FINANCE SA) (Figs 1 to 3 particularly relevant)	1 & 3

X Document indicating lack of novelty or inventive step  
Y Document indicating lack of inventive step if combined with one or more other documents of same category.  
& Member of the same patent family

A Document indicating technological background and/or state of the art.  
P Document published on or after the declared priority date but before the filing date of this invention.  
E Patent document published on or after, but with priority date earlier than, the filing date of this application.



Application No: GB 9912342.4  
Claims searched: 9 to 13 & 15

Examiner: Mike Henderson  
Date of search: 20 September 2000

**Patents Act 1977**  
**Further Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:  
UK Cl (Ed.R): B8P (PL1) B8T (TCM TCP TPM TPA)  
Int Cl (Ed.7): B65D 39/00 39/02 39/04  
Other: ONLINE:WPI,EPODOC,JAPIO

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 1420166 (PFIZER INC) (Whole disclosure relevant)	9 to 12
X	GB 1349481 (WASSILIEFF) (Whole disclosure relevant)	9 to 11 & 13
X	GB 1064389 (GLASKONTOR MAX GEISS KG) (Whole disclosure relevant)	9 to 11 & 13
X	GB 725246 (SOC D'EXPLOITATION DES ETABLISSEMENTS LICK ET DES BREVETS PARAMOUNTS) (Whole disclosure relevant)	9 to 11 & 13
X	GB 280658 (KNIGHT) (Whole disclosure relevant)	9 to 13
X	GB 276923 (LEMBERGER et al) (Whole disclosure relevant)	9 & 11

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.